TACHYARRHYTHMIAS

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DEFINITIONS

- **WHAT IS TACHYCARDIA**
  - >100 bpm
  - Usually >150 if causing symptoms
- **WHAT IS WIDE**
  - >120 milliseconds
  - >3 boxes
- **WHAT IS UNSTABLE**
  - Chest pain
  - Altered mental status
  - Hypotension
  - Acute CHF

VAUGHAN-WILLIAMS CLASSIFICATION

Class I:
Local anaesthetic action, reducing Na Current - Sodium Channel Blockade:
- **IA** Prolong Repolarization
  Quinidine
- **IB** Shortern Repolarization
  Lidocaine
- **IC** Little effect on repolarization
  Encainide

Class II:
Beta-blockade
Propanolol

Class III:
Action potential prolongation (Potassium channel blockade + inactivated Na+ channels)
Amiodarone

Class IV:
Calcium channel blockade
Verapimil

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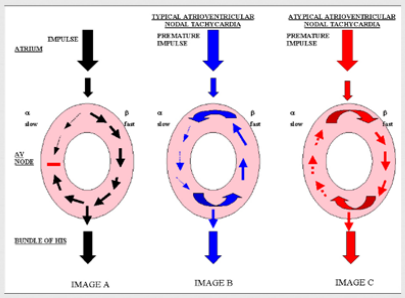
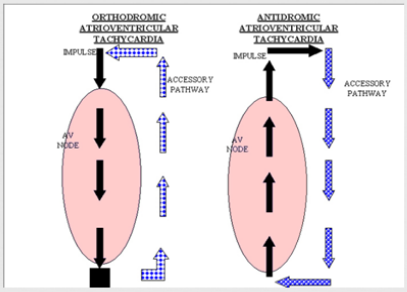
TYPES

- Increased Automaticity
  - Enhanced
    - Steepening of phase 4
  - Abnormal
    - Structural lesion
- Re-entrant
  - Atrial
  - AVNRT
  - AVRT
    - Accessory pathway





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SIMPLE RULES

1. Know what adenosine does
2. Nature of reentrant tachycardias
   1. No ramp up
   2. Regular
   3. No gradual slow down
3. Most wide complex tachycardias are VT
4. Irregular and wide = WPW
5. You can't block the AVN in WPW

	NARROW	WIDE
REGULAR	Sinus Tachycardia AVRT (orthodromic) AVNRT Junctional tachycardia PAT A-flutter with regular block	VT SVT with aberrancy AVRT (antidromic)
IRREGULAR	MAT AF A-flutter with variable block	A-fib with aberrancy

SINUS TACHYCARDIA

- Can be irregular
- P waves present
  - Upright in I, II, and AVF
- Fever
- Anemia
- Thyroid disease
- Shock
- Hypoxia

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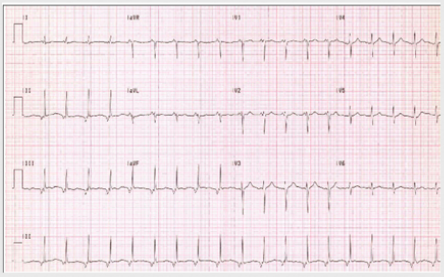
SINUS TACHYCARDIA

ATRIAL TACHYCARDIA

- Increased automaticity
- Rate 150-250
- No conversion to AV block
- Increased catecholamines
  - Also post cardiac surgery or Dig
- Abnormal P waves
  - Negative in I, II, AVF

ATRIAL TACHYCARDIA



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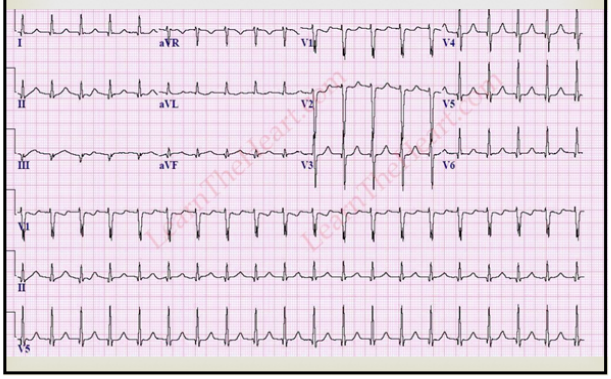
JUNCTIONAL TACHYCARDIA

- Increased automaticity
- Within AV node or Bundle of HIS
- P wave just before or within QRS
- Rate 70-130
- ACS, cardiomyopathy, Dig
- May appear to be AV dissociation
  - Competing ectopic site and SA node

JUNCTIONAL TACHYCARDIA



ATRIAL FLUTTER

- Atrial re-entrant rhythm
- Rate 250-300
- Stays constant
- Blocking AV node slows but doesn't convert
- MI, CHF, PE, myocarditis

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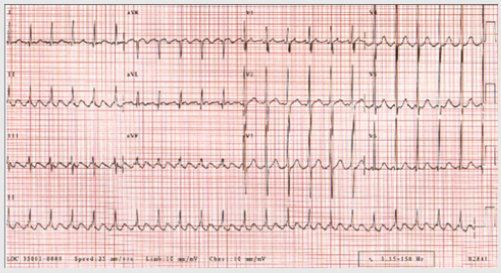
ATRIAL FLUTTER



TREATMENT

- Low energy cardioversion
- Procainamide
- Esmolol
  - 60% conversion
- Diltiazem

PSVT

- AVNRT
- AVRT
- Rate 140-280
- P usually buried
- Atrial stretch, myocarditis, catecholamines
- Adenosine
- Alternates
  - Diltiazem
  - Esmolol

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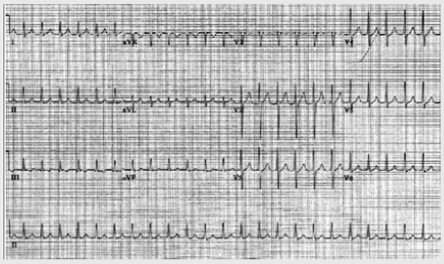
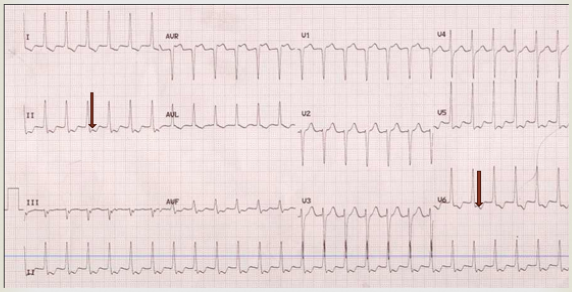
PSVT



SVT WITH RETROGRADE P WAVES



MAT

- Abnormal automaticity
- At least three focuses
- Rate 100-180
- Variable PR interval and P morphology
- Usually in chronic pulmonary disease
- 2 grams of Mag

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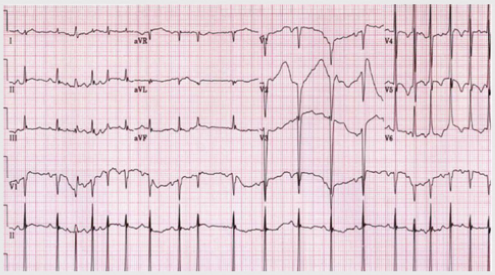
MAT



ATRIAL FIB

- Re-entrant atrial tachycardia
- 400-700 bpm
- AV node cannot conduct
- Concern for emboli
- Cardioversion at 100-200j
- Diltiazem
- Procainamide
- Amiodarone
- Ibutilide

CANADIAN STYLE

- Onset <48hrs
- Rate control
  - Diltiazem or Metoprolol
- Pharmacologic cardioversion
  - Procainamide
- Anticoagulation
  - None if clearly <48hrs

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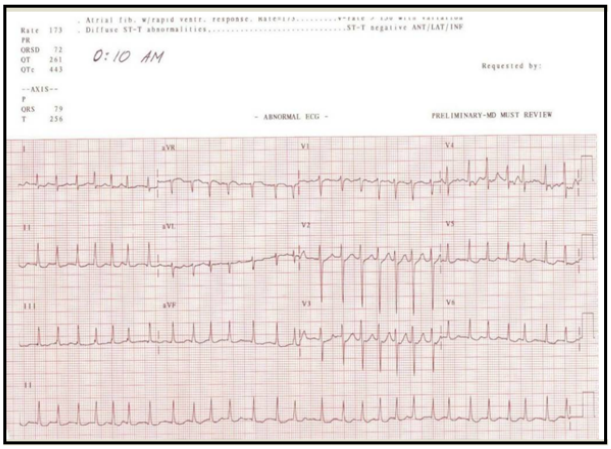
DISPOSITION

- Cardioverted
  - Home in 1 hr
  - Outpatient Echo
  - No antiarrhythmics
  - No anticoagulation
- Rate controlled
  - Home on diltiazem
  - Home on Warfarin
  - Followup for anticoagulation check and echo
  - Elective cardioversion in 4 weeks



THE DREADED WPW

- Bypass track
- 80% of time its PSVT
  - Treat as usual
- 20% A-fib
- Orthodromic or antidromic conduction

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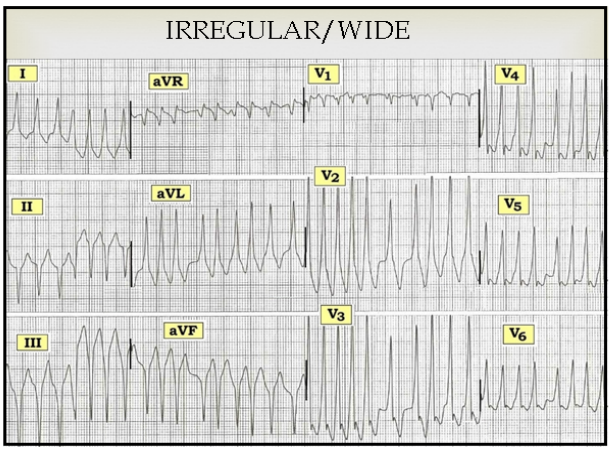

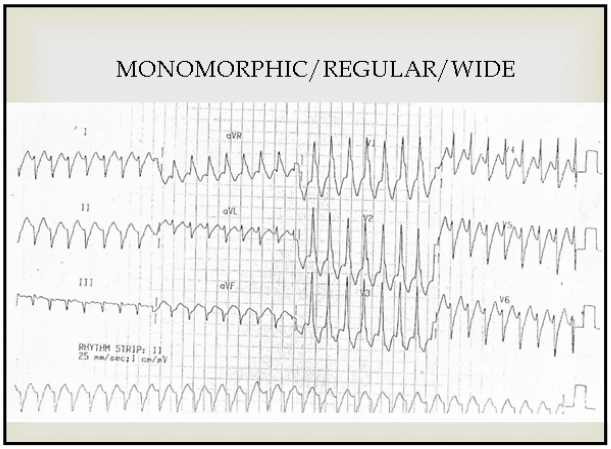

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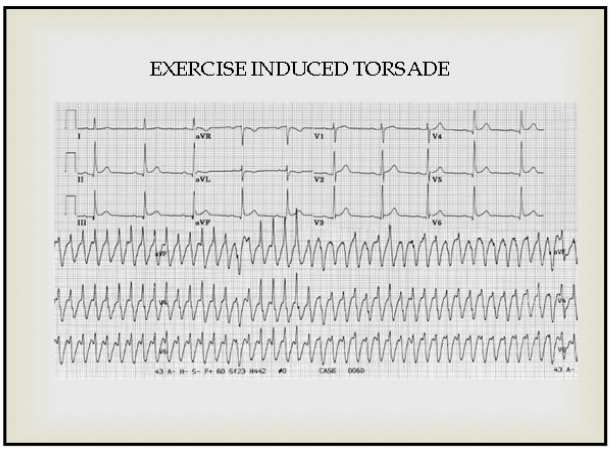

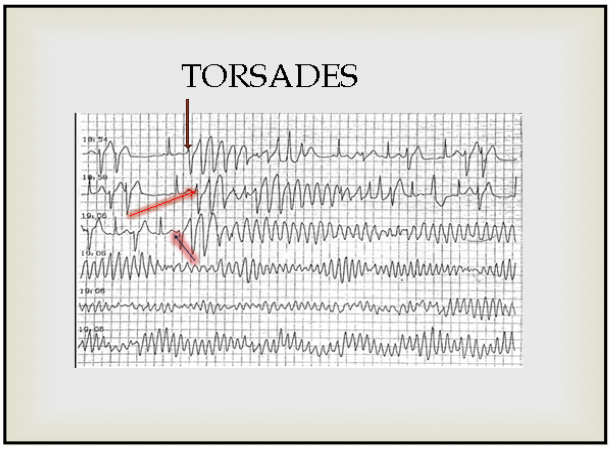

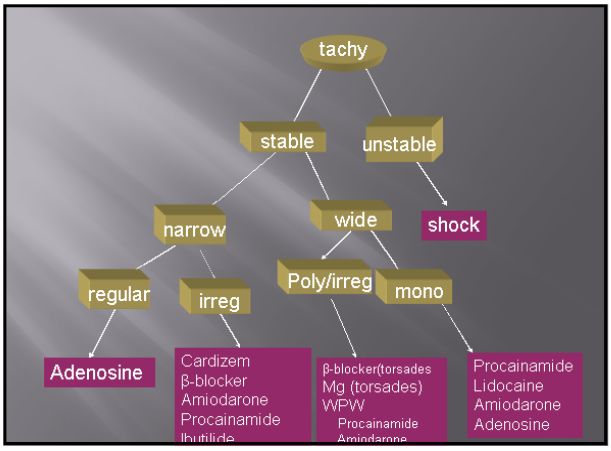

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